WHAT IS CLAIMED IS:

1   1. A method for facilitating acknowledgement of a request for altering a multicast group

2   membership status, comprising:

3   receiving an Internet Group Management Protocol (IGMP) Membership Report

4   message designating a request for altering a present membership status with

5   respect to designated multicast information;

6   determining a membership action associated with the IGMP Membership Report

7   message;

8   preparing a membership acknowledge message in response to determining the

9   membership action, wherein the membership acknowledgment message

10   designates a resulting membership status associated with the request for

11   altering the present membership status; and

12   transmitting the membership acknowledge message for reception by a requesting

13   system.

1   2. The method of claim 1 wherein:

2   determining the membership action includes confirming an inability to implement

3   the request for altering the present membership status; and

4   preparing the membership acknowledge message includes preparing an IGMP

5   negative acknowledge message.

1   3. The method of claim 2 wherein preparing the IGMP negative acknowledge message

2   includes:

3   specifying an acknowledgement indicator in a message type field of an IGMP

4   message;

5   specifying a multicast group identifier associated with the particular multicast

6   group in a multicast group identifier field of the IGMP message; and

7   specifying a negative acknowledgement indicator in an acknowledgment type field

8   of the IGMP message, the negative acknowledgement indicator designates the

9   inability to implement the request for altering the present membership status.

1   4. The method of claim 3 wherein:

2   receiving the IGMP Membership Report message includes receiving an IGMP

3   Membership Report message; and

4   the IGMP Membership Report message requests membership in a particular

5   multicast group for receiving said designated multicast information.

1   5. The method of claim 4 wherein preparing the negative acknowledgment message

2   includes specifying supplemental membership action information in an additional

3   cause information field of the IGMP message.

1   6. The method of claim 3 wherein:

2   receiving the IGMP Membership Report message includes receiving an IGMP

3   Leave Group message; and

4   the IGMP Leave Group message requests removal from a particular multicast

5   group receiving said designated multicast information.

1   7. The method of claim 6 wherein preparing the negative acknowledgment message

2   includes specifying supplemental membership action information in an additional

3   cause information field of the IGMP message.

1   8. The method of claim 1 wherein:

2   determining the membership action includes confirming an ability to implement

3   the request for altering the present membership status; and

4   preparing the membership acknowledge message includes preparing an affirmative

5   acknowledge message.

1   9. The method of claim 8 wherein preparing the affirmative acknowledge message

2   includes:

3   specifying an acknowledgement indicator in a message type field of an IGMP

4   message;

5   specifying a multicast group identifier associated with the particular multicast

6   group in a multicast group identifier field of the IGMP message; and

7   specifying an affirmative acknowledgement indicator in an acknowledgment type

8   field of the IGMP message, the affirmative acknowledgement indicator

9   designates the ability to implement the request for altering the present

10   membership status.

1   10. The method of claim 9 wherein:

2   receiving the IGMP Membership Report message includes receiving an IGMP

3   Leave Group message; and

4   the IGMP Leave Group message requests removal from a particular multicast

5   group receiving said designated multicast information.

1   11. The method of claim 9 wherein:

2   receiving the IGMP Membership Report message includes receiving an IGMP

3   Membership Report message; and

4   the IGMP Membership Report message requests membership in a particular

5   multicast group for receiving said designated multicast information.

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1   12. A method for facilitating acknowledgment of a request for altering a multicast group

2   membership status, comprising:

3   receiving an Internet Group Management Protocol (IGMP) Membership Report

4   message, wherein the IGMP Membership Report message is transmitted from

5   a requesting system and requests membership in a particular multicast group

6   for receiving designated multicast information;

7   confirming an ability to implement membership of the requesting system in the

8   particular multicast group;

9   preparing a first affirmative acknowledge message after confirming the ability to

10   implement membership of the requesting system in the particular multicast

11   group, wherein preparing the first affirmative acknowledge message includes:

12   specifying acknowledge message in a type field of a first IGMP

13   message;

14   specifying an identifier of the particular multicast group in a multicast

15   group identifier field of the first IGMP message; and

16   specifying an affirmative acknowledgement in an acknowledgment

17   type field of the first IGMP message, the affirmative

18   acknowledgement designating the ability to implement membership

19   of the requesting system in the particular multicast group;

20   transmitting the first affirmative acknowledge message for reception by the

21   requesting system;

22   receiving an IGMP Leave Group message from the requesting system after

23   transmitting the first affirmative acknowledge message, wherein the IGMP

24   Leave Group message requests removal of the requesting system from the

25   particular multicast group;

26   confirming an ability to implement removal of the requesting system from the

27   particular multicast group; and

28   preparing a second affirmative acknowledge message after confirming the ability

29   to implement removal of the requesting system from the particular multicast

30   group, wherein preparing the second affirmative acknowledge message

31   includes:

32 specifying acknowledge message in a type field of a first IGMP

33   message;

34 specifying an identifier of the particular multicast group in a multicast

35   group identifier field of the first IGMP message; and

36 specifying an affirmative acknowledgement in an acknowledgment

37   type field of the first IGMP message, the affirmative

38   acknowledgement designating the ability to implement removal of

39   the requesting system from the particular multicast group.

1   13. A data processor program product for facilitating acknowledgment of a request for

2   altering a multicast group membership status, comprising:

3   a data processor program processable by a data processor;

4   an apparatus from which the data processor program is accessible by the data

5   processor; and

6   the data processor program being capable of enabling the data processor to

7   facilitate:

8   receiving an Internet Group Management Protocol (IGMP)

9   Membership Report message designating a request for altering a

10   present membership status with respect to designated multicast

11   information;

12   determining a membership action associated with the IGMP

13   Membership Report message;

14   preparing a membership acknowledge message in response to

15   determining the membership action, wherein the membership

16   acknowledgment message designates a resulting membership status

17   associated with the request for altering the present membership

18   status; and

19   transmitting the membership acknowledge message for reception by a

20   requesting system.

1   14. The data processor program product of claim 13 wherein enabling the data processor

2   to facilitate:

3   determining the membership action includes enabling the data processor to

4   facilitate confirming an inability to implement the request for altering the

5   present membership status; and

6   preparing the membership acknowledge message includes enabling the data

7   processor to facilitate preparing an IGMP negative acknowledge message.

1   15. The data processor program product of claim 14 wherein enabling the data processor

2   to facilitate preparing the IGMP negative acknowledge message includes:

3   enabling the data processor to facilitate specifying an acknowledgement indicator

4   in a message type field of an IGMP message;

5   enabling the data processor to facilitate specifying a multicast group identifier

6   associated with the particular multicast group in a multicast group identifier

7   field of the IGMP message; and

8   enabling the data processor to facilitate specifying a negative acknowledgement

9   indicator in an acknowledgment type field of the IGMP message, the negative

10   acknowledgement indicator designates the inability to implement the request

11   for altering the present membership status.

1   16. The data processor program product of claim 15 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Membership Report message; and

5   the IGMP Membership Report message requests membership in a particular

6   multicast group for receiving said designated multicast information.

1   17. The data processor program product of claim 16 wherein enabling the data processor

2   to facilitate preparing the negative acknowledgment message includes enabling the

3   data processor to facilitate specifying supplemental membership action information in

4   an additional cause information field of the IGMP message.

1   18. The data processor program product of claim 15 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Leave Group message; and

5   the IGMP Leave Group message requests removal from a particular multicast

6   group receiving said designated multicast information.

1   19. The data processor program product of claim 18 wherein enabling the data processor

2   to facilitate preparing the negative acknowledgment message includes enabling the

3   data processor to facilitate specifying supplemental membership action information in

4   an additional cause information field of the IGMP message.

1   20. The data processor program product of claim 13 wherein enabling the data processor

2   to facilitate:

3   determining the membership action includes enabling the data processor to

4   facilitate confirming an ability to implement the request for altering the present

5   membership status; and

6   preparing the membership acknowledge message includes enabling the data

7   processor to facilitate preparing an affirmative acknowledge message.

1   21. The data processor program product of claim 20 wherein enabling the data processor

2   to facilitate preparing the affirmative acknowledge message includes:

3   enabling the data processor to facilitate specifying an acknowledgement indicator

4   in a message type field of an IGMP message;

5   enabling the data processor to facilitate specifying a multicast group identifier

6   associated with the particular multicast group in a multicast group identifier

7   field of the IGMP message; and

8   enabling the data processor to facilitate specifying an affirmative

9   acknowledgement indicator in an acknowledgment type field of the IGMP

10   message, the affirmative acknowledgement indicator designates the ability to

11   implement the request for altering the present membership status.

1   22. The data processor program product of claim 21 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Leave Group message; and

5   the IGMP Leave Group message requests removal from a particular multicast

6   group receiving said designated multicast information.

1   23. The data processor program product of claim 21 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Membership Report message; and

5 the IGMP Membership Report message requests membership in a particular

6   multicast group for receiving said designated multicast information.

1   24. A system for facilitating acknowledgment of a request for altering a multicast group

2   membership status, comprising:

3   a multicast-capable system including a data processor; and

4   a data processor program accessible by the data processor of the multicast-capable

5   system;

6   the data processor program being capable of enabling the data processor of the

7   multicast-capable system to facilitate:

8   receiving an Internet Group Management Protocol (IGMP)

9   Membership Report message designating a request for altering a

10   present membership status with respect to designated multicast

11   information;

12   determining a membership action associated with the IGMP

13   Membership Report message;

14   preparing a membership acknowledge message in response to

15   determining the membership action, wherein the membership

16   acknowledgment message designates a resulting membership status

17   associated with the request for altering the present membership

18   status; and

19   transmitting the membership acknowledge message for reception by a

20   requesting system.

1   25. The system of claim 24 wherein enabling the data processor to facilitate:

2   determining the membership action includes enabling the data processor to

3   facilitate confirming an inability to implement the request for altering the

4   present membership status; and

5   preparing the membership acknowledge message includes enabling the data

6   processor to facilitate preparing an IGMP negative acknowledge message.

1   26. The system of claim 25 wherein enabling the data processor to facilitate preparing the

2   IGMP negative acknowledge message includes:

3   enabling the data processor to facilitate specifying an acknowledgement indicator

4   in a message type field of an IGMP message;

5   enabling the data processor to facilitate specifying a multicast group identifier

6   associated with the particular multicast group in a multicast group identifier

7   field of the IGMP message; and

8   enabling the data processor to facilitate specifying a negative acknowledgement

9   indicator in an acknowledgment type field of the IGMP message, the negative

10   acknowledgement indicator designates the inability to implement the request

11   for altering the present membership status.

1   27. The system of claim 26 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Membership Report message; and

5   the IGMP Membership Report message requests membership in a particular

6   multicast group for receiving said designated multicast information.

1   28. The system of claim 27 wherein enabling the data processor to facilitate preparing the

2   negative acknowledgment message includes enabling the data processor to facilitate

3   specifying supplemental membership action information in an additional cause

4   information field of the IGMP message.

1   29. The system of claim 26 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Leave Group message; and

5   the IGMP Leave Group message requests removal from a particular multicast

6   group receiving said designated multicast information.

1   30. The system of claim 29 wherein enabling the data processor to facilitate preparing the

2   negative acknowledgment message includes enabling the data processor to facilitate

3   specifying supplemental membership action information in an additional cause

4   information field of the IGMP message.

1   31. The system of claim 24 wherein enabling the data processor to facilitate:

2   determining the membership action includes enabling the data processor to

3   facilitate confirming an ability to implement the request for altering the present

4   membership status; and

5   preparing the membership acknowledge message includes enabling the data

6   processor to facilitate preparing an affirmative acknowledge message.

1   32. The system of claim 31 wherein enabling the data processor to facilitate preparing the

2   affirmative acknowledge message includes:

3   enabling the data processor to facilitate specifying an acknowledgement indicator

4   in a message type field of an IGMP message;

5   enabling the data processor to facilitate specifying a multicast group identifier

6   associated with the particular multicast group in a multicast group identifier

7   field of the IGMP message; and

8   enabling the data processor to facilitate specifying an affirmative

9   acknowledgement indicator in an acknowledgment type field of the IGMP

10   message, the affirmative acknowledgement indicator designates the ability to

11   implement the request for altering the present membership status.

1   33. The system of claim 32 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Leave Group message; and

5   the IGMP Leave Group message requests removal from a particular multicast

6   group receiving said designated multicast information.

1   34. The system of claim 32 wherein:

2   enabling the data processor to facilitate receiving the IGMP Membership Report

3   message includes enabling the data processor to facilitate receiving an IGMP

4   Membership Report message; and

5   the IGMP Membership Report message requests membership in a particular

6   multicast group for receiving said designated multicast information.

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